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Journal of the Society of Arts.

FRIDAY, OCTOBER 8, 1869.

Announcements by the Council.

IMPROVED CABS.

The Council of the Society of Arts offer the following medals for improved hackney carriages specially suited to the metropolis :—

The Society's Gold Medal for the best and most convenient open hackney carriage for two persons.

The Society's Silver Medal for the second-best ditto.

The Society's Gold Medal for the best and most convenient closed hackney carriage for two persons.

The Society's Silver Medal for the second-best ditto.

The Society's Gold Medal for the best and most convenient hackney carriage for four persons, either open or closed, or both.

The Society's Silver Medal for the second-best ditto.

Lightness of construction, combined with adequate strength and durability, will be especially considered in making the awards.

The awards will be made after actual trials of the carriages extending over a certain period.

Communications describing the carriages must be sent to the Secretary of the Society of Arts before the 1st January, 1870, the carriages to be sent to a place hereafter to be appointed.

The Council also offer the Society's Silver Medal for the best instrument, to be affixed to a cab or other hackney carriage, for indicating the fare as between the passenger and the driver, whether by registering the distance travelled or otherwise, and which instrument shall also indicate, for the convenience of the cab-owner and of the driver, the total distance travelled during the day and the total amount earned. The instruments competing, with full descriptions of their construction, to be sent to the Society's House before the 1st January, 1870.

Competitors may, at their option, sign their communications, or may forward with them sealed letters containing the name and address of the writer.

The Council reserve to themselves the right of withholding all or any of the medals, in case none of the carriages or instruments possess, in their opinion, sufficient merit.

In the trials of the several carriages, the small amount of vibration and noise will be duly considered by the judges.

DESIGNS FOR CHANNEL STEAMERS.

The very defective state of the accommodation afforded by the Channel steamers, plying between this country and the Continent, having been brought under the notice of the Council, they

have determined to offer the Gold Medal of the Society, and the large Silver Medal of the Society, for the best and the second-best block model of a steamer, which shall afford the most convenient shelter and accommodation to passengers on the deck of the vessel crossing the Channel between France and England. The steamer is not to exceed in tonnage and draught the best vessels now in use between Folkestone and Boulogne, and the model must be on a scale of a quarter of an inch to a foot. The models, marked in cypher, are to be sent in to the Society of Arts' House, John-street, Adelphi, on or before the 1st November, 1869, with a sealed envelope, giving the name and address of the designer.

The Council reserve the right of withholding either or both medals, in case, in their opinion, the models sent in do not possess sufficient merit.

The following particulars of the South-Eastern Channel steamers, *Victoria*, *Albert Edward*, and *Alexandra*, are given for the convenience of competitors, but it is not intended to confine the designs to them, except as to tonnage and draught :—

Length between perpendiculars, 200 ft.

Breadth of beam, 24 ft.

Depth underside of deck amidships, 12 ft. 6 in.

Draught of water, 7 ft.

Bow, clipper.

Stern, elliptic.

Rig, polacca with two masts, lug foresail, gaff mainsail, staysail, and flying jib.

Engines, oscillating.

Paddle wheels, 17 ft. 6 in. diameter.

Tonnage, 568 tons.

Speed, 17 miles an hour.

SUBSCRIPTIONS.

The Michaelmas subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.," and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of Institutions.

EXAMINATION PAPERS, 1869.

(Continued from page 844.)

The following are the Examination Papers set in the various subjects at the Final Examination held in April last :—

GERMAN.

THREE HOURS ALLOWED.

Candidates for a First Class Certificate must translate one prose and one poetical extract of Section I., answer the last three questions of Section II., and write out the remaining portion of the paper. Candidates for a Second Class Certificate must translate either extract *a* or *b* of Section I., and answer all the questions of Section II. Candidates for a Third Class Certificate have to do the same work, with the exception of the last four questions of Section II.

SECTION I.

- a. Frau, welchen Sturm gefährlicher Gedanken
Weckst du mir in der stillen Brust! Mein Innerstes
Kehrst du ans Licht des Tages mir entgegen,
Und, was ich mir zu denken still verbot
Du sprichst's mit leichter Zunge kecklich aus.
Hast du auch wohl bedacht, was du mir rätst?
Die wilde Zwietracht und den Klang der Waffen
Rufst du in dieses friedgewohnte Thal
Wir wagten es, ein schwaches Volk der Hirten,
In Kampf zu gehen mit dem Herrn der Welt?
Der gute Schein nur ist's, worauf sie warten,
Um loszulassen auf dies arme Land
Die wilden Horden ihrer Kriegesmacht,
Darin zu schalten mit des Siegers Rechten,
Und unterm Schein gerechter Züchtigung
Die alten Freiheitsbriefe zu vertilgen.

Schiller.

- b. Doch der Vater fuhr auf und sprach die zornigen
Worte:
Wenig Freud' erleb ich an dir! ich sagt' es doch
immer,
Als du zu Pferden nur und Lust nur bezeugtest zum
Acker:
Was ein Knecht schon verrichtet des wohlbegüterten
Mannes,
Thust du; indessen musz der Vater des Sohnes
entbehren,
Der ihm zur Ehre doch auch vor anderen Bürgern
sich zeigte.
Und so tauschte mich früh mit leerer Hoffnung die
Mutter,
Wenn in der Schule das Lesen und Schreiben und
Lernen dir niemals
Wie den andern gelang und du immer der unterste
saszest.
Freilich! das kommt daher wenn Ehrgefühl nicht
im Busen
Eines Jünglings lebt, und wenn er nicht höher hinauf
will.
Hätte mein Vater gesorgt für mich so wie ich für
dich that,
Mich zur Schule gesendet und mir die Lehrer
gehalten,
Ja, ich wäre was anders als Wirth zum goldenen
Löwen.

Gæthe.

c. Und wirklich ward das Elend in Deutschland zu einem
so ausschweifenden Grade gestiegen, dasz das Gebet um
Frieden von tausendmaltausend Zungen ertönte, und
auch der nachtheiligste noch immer für eine Wohlthat
des Himmels galt. Wüsten lagen da, wo sonst tausend
frohe und fleisige Menschen wimmelten, wo die Natur
ihren herrlichsten Segen ergossen und Wohlleben und
Ueberflusz geherrscht hatte. Die Felder, von der flei-
sizigen Hand des Pflügers verlassen, lagen ungebaut und
verwildert, und, wo eine junge Saat aufschosz, oder eine
lachende Ernte winkte, da zerstörte ein einziger Durch-
marsch den Fleisz eines ganzen Jahres, die letzte
Hoffnung des verschmachtenden Volkes. Verbrannte
Schlösser, verwüstete Felder, eingeäscherte Dörfer lagen
meilenweit herum in grauvoller Zerstörung, während
dasz ihre verarmten Bewohner hingingen die Zahl jener
Mordbrennerheere zu vermehren und was sie selbst
erlitten hatten ihren verschonten Mitbürgern schrecklich
zu erstatten.—Schiller.

d. Hildebrand (nachher Gregor VII.) war der Sohn
eines Zimmermanns zu Savona, einer toskanischen Stadt.
Er trat in den geistlichen Stand, und da er sehr vorzüg-
liche Geistesgaben zeigte, so wurde er vom Papst Leo IX.
unter Heinrich's III. Regierung aus dem Kloster zu
Clugny mit nach Rom genommen und dort zum Sub-
diakon der römischen Kirche und nachher zum Kanzler
gemacht; und von nun an lenkte er die Schritte der
Päpste und war die Seele des römischen Hofes. Sein

Ziel war die Erhöhung des Papstes über alle Fürsten
und Könige der Erde, wie er denn schon als Kanzler sofort
anfang das Zählen nach Regierungsjahren der Kaiser in
den päpstlichen Bullen wegzulassen. Und er hat sein
Ziel mit solcher Klugheit, Beharrlichkeit und Kraft sein
ganzes Leben hindurch verfolgt, dasz man ihn zu den
auszerordentlichen Menschen der Weltgeschichte zählen
musz.—Kohlrausch.

SECTION II.—GRAMMAR AND IDIOMS.

1. Decline in the singular and plural—der brave Mann;
die goldne Uhr; das deutsche Lied; ein schöner Tag;
der Fremde; ein neues Haus.
2. Give the declension in both numbers of—ich, er,
sie; derjenige; welcher, welche, welches, and dein, deine,
dein.
3. Conjugate in the present and imperfect indicative,
and state the past participle of—warten, reiten, werben;
verstehen, anfangen, and ausfahren.
4. Translate into German:—It is a quarter past five;
this table is three feet long; I have seen him three times;
two-thirds of five-sevenths; my brother was in the house
when I went into the garden; it does not rain, but it
snows.
5. Give the rules with reference to the declension of
proper names in German, illustrating them by examples.
6. Write down the past participle of—*unterhalten*, to
amuse, and *unterhalten*, to hold under; *hintergehen*, to
deceive, and *hintergehen*, to go behind; also of *früh-
stücken*; *rechtfertigen*, and *vollführen*.
7. Es steht zu hoffen.—Er steht in der Blüthe seiner
Jahre.—Die Sachen stehen gut.—Wie steht es mit Ihrer
Gesundheit?—Wer hat dieses Werk verlegt?—Er sah
sehr verlegen aus.—Er verlegt sich auf das Studium der
deutschen Sprache.—Womit vertreiben Sie sich die Zeit?
—Er treibt das Englische sehr fleiszig.—Wer nicht ver-
trieben sein will, musz vertreiben.

SECTION III.

[The writing, either in German or English characters,
must be thoroughly legible and distinct.]

The Europeans were hardly less amazed at the scene
now before them. Every herb, and shrub, and tree was
different from those which flourished in Europe. The soil
seemed to be rich, but bore few marks of cultivation.
The climate, even to the Spaniards, felt warm, though
extremely delightful. The inhabitants appeared in the
simple innocence of nature. . . . Their complexion was
of a dusky copper colour, their features singular rather
than disagreeable, their aspect gentle and timid; though
not tall, they were well-shaped and active. They were
shy at first through fear, but soon became familiar with
the Spaniards, and with transports of joy received from
them bells, glass beads, &c., in return for which they
gave such provisions as they had, and some cotton yarn;
the only commodity of value that they could produce.
Towards evening Columbus returned to his ship, accom-
panied by many of the islanders in their boats, which
they called canoes.—Robertson.

Questions in German History and Literature.

- a. Give a brief outline of the struggle between Heinrich
IV. and the Saxons.
- b. Through which means did Gregory VII. endeavour
to reform the abuses of the Church, and to secure its
ascendency?
- c. What was the Concordat of Worms?
- d. Describe briefly the life and writings of Hans
Sachs.
- e. Which kind of poetry principally flourished during
the times of the Reformation?
- f. What is the principal work of Johann Fischart?
With what tendency was it written?

Thema zu einem deutschen Aufsatz:
Ueber Sparsamkeit und Geiz.

ITALIAN.

(THREE HOURS ALLOWED.)

I.

Candidates for a first-class certificate are required to translate into English the following passages (poetry and prose), and to answer any grammatical questions added to them:—

Demarista. È chiaro a ognun, che al par di te spogliarmi
L'amor non so del sangue mio; che madre
Pur sempre io son Fratel così tu fossi!
Timeleone. Oh! qual madre se' tu? Spartane donne,
T' insegnin esse in libera cittade
Ciò ch' esser den le madri. Il tuo, che chiami
Materno amore, effeminato senso
Di cieca donna egli è, che l' onor vero
Ti fa pospor del figlio alla ostinata,
Vile superbia sua. Le madri in Sparta
Mira, dei figli per la patria morti
Allegrarsi; contarne esse le piaghe;
E lavarle, baciandole, di liete,
Non di dolenti lagrime; e fastosa
Andarne più, qual di più figli è priva:
Donne son quelle, e cittadine, e madri.
Tu, del tuo figlio alla inflessibil voglia,
Che pur conosci rea, ti arrendi; ed osi
Dirmi e sperar ch' io mi v' arrenda? Al mio
Più inflessibil voler, ch' esser sai figlio
Di virtù, di', perchè non cedi? Il nome
Per lui fai solo risuonar di madre;
Per me tu il taci?

(ALFIERI, *Timeleone*, *tragedia*.)

GRAMMATICAL NOTES.

Den: Write the whole present tense of the indicative of this verb with its various forms, for the first and third persons, singular and plural.

Pospor: Give the preterite and future tenses of this verb.

Mira: What part of speech is this, and in what sense does it stand here?

Fastosa andarne: What is the correct meaning of this expression?

Voglia and Voler: Can you show any distinction between these words?

Taci: Give the whole present and preterite tenses of the indicative of this verb?

II.

Niuna cosa vola più che la occasione; niuna più pericolosa che il giudicare delle altrui professioni; niuna più dannosa che il sospetto immoderato. Desideravano la concordia tutti i principali cittadini, assuefatti, dietro agli esempj dei maggiori loro, a difendere spesso la libertà dal ferro con l'oro; perciò facevano istanza che gli ambasciatori eletti subitamente andassero, ai quali oltre alle altre cose si commetteva, che di Prato si facessero *porgere* vettovaglie all' esercito spagnuolo, acciocchè il vicerè quietamente aspettasse se la concordia trattata aveva effetto. Ma il Gonfaloniere, o persuadendosi, contro alla sua naturale timidità, che gl' inimici disperati della vittoria dovessero da se stessi partirsi; o temendo dei Medici in qualunque modo ritornassero in Firenze, o conducendolo il fato a essere cagione della rovina propria, o delle calamità della patria, allungando artificiosamente la spedizione degli ambasciatori operò talmente, che non andarono il dì, nel quale, secondo la deliberazione fatta, dovevano andare

(GUICCIARDINI, *Storia d' Italia*.)

III.

Translate freely into Italian:—

Dear Joseph,—The only recompense I can make you for your kind attention to my affairs, during my illness, is to tell you, that by the mercy of God I am restored to perfect health, both of mind and body. This, I believe, will give you pleasure, and I would gladly do anything from which you could receive it.

I left St. Alban's on the 17th, and arrived that day at Cambridge, spent some time there with my brother, and came hither on the 22nd. I have a lodging that puts me continually in mind of our summer excursions; we have had many worse, and *except the size of it* (which, however, is fit for a single man,) few better. I am not quite alone, having brought a servant with me from St. Alban's, who is the very mirror of fidelity and affection for his master. And whereas the Turkish spy says, he kept no servant because he would not have an enemy in his house, I hired mine, because I would have a friend. Men do not usually bestow these encomiums on their lackeys, nor do they usually deserve them, but I have had experience of mine, both in sickness and in health, and have never seen his fellow.

I beg you will remember me to all my friends, which is a task will cost you no great pains to execute; particularly remember me to those of your own house, and believe me your very affectionate.

(COWPER'S *Letters*.)

IV.

FAMILIAR AND IDIOMATIC PHRASES, &c.

(To be rendered, not literally, but by their English equivalents.)

Andar bel bello.
Detto fatto.
Egli vuol menarci per le lunghe.
Come ve la passate?
Portatevi da uomo.
Non so risolvermi così su due piedi.
Ha voce di dotto.
Ponete mente a quanto vi dico.
Fate pur capitale di me.
Menare una vita di stenti.
Egli se ne promette mari e monti.
Tanto accade a chi non ha giudizio.

Candidates for second or third-class certificates should (1) translate into English the following extracts, and (2) answer the grammatical questions given below:—

1.

Licio. Ma che sarà di Roma,
Se perde il padre suo?

Regolo. Roma rammenti
Che il suo padre è mortal; che al fin vacilla
Anch' ei sotto l'acciar; che sente al fine
Anch' ei le vene inaridir, che ormai
Non può versar per lei
Nè sangue, nè sudor; che non gli resta
Che finir da Romano. Ah m' apre il cielo
Una splendida via; de' giorni miei
Posso l'annoso stame
Troncar con lode, e mi volete infame!
No, possibil non è: de' miei Romani
Conosco il cor. Da Regolo diverso
Pensar non può chi respirò nascendo
L' aure del Campidoglio. Ognun di voi
So che nel cuor m' applaude;
So che m' invidia; e che fra' moti ancora
Di quel, che l'ingannò, tenero eccesso,
Fa voti al ciel di poter far l' istesso.
Ah! non più debolezza. A terra, a terra
Quell' armi inopportune: al mio trionfo
Più non tardate il corso,
O amici, o figli, o cittadini. Amico
Favor da voi dimando;
Esorto cittadin; padre comando.

(METASTASIO, *Attilio Regolo*.)

II.

Ne' tumulti popolari c' è sempre un certo numero d' uomini che, o per un riscaldamento di passione, o per una persuasione fanatica, o per un disegno scellerato, o per un maledetto gusto di soqquadro, fanno di tutto per ispinger le cose al peggio; propongono e promuovono i più spietati consigli, soffian nel fuoco ogni volta che principia a illanguidirsi: non è mai troppo per costoro;

non vorrebbero che il tumulto avesse nè fine nè misura. Ma per contrappeso c'è sempre anche un certo numero d'altri uomini che, con pari ardore e con insistenza pari, s'adoprono per produr l'effetto contrario; taluni mossi da amicizia o da parzialità per le persone minacciate; altri senz'altro impulso che d'un pio e spontaneo orrore del sangue e de' fatti atroci. Il cielo li benedica. In ciascuna di queste due parti opposte, anche quando non ci siano concerti antecedenti, l'uniformità de' voleri crea un concerto istantaneo nell'operazioni. Chi forma poi la massa, e quasi il materiale del tumulto, è un miscuglio accidentale d'uomini, che, più o meno per gradazioni indefinite, tengono dell'uno e dell'altro estremo: Viva e muoia, son le parole che mandan fuori più volentieri; e chi è riuscito a persuaderli che un tale non meriti d'essere squartato, non ha bisogno di spendere più parole per convincerli che sia degno d'essere portato in trionfo: Siccome però questa massa, avendo la maggior forza, la può dare a chi vuole, così ognuna delle due parti attive usa ogni arte per tirarla dalla sua, per impadronirsene: sono quasi due anime nemiche, che combattono per entrare in quel corpaccio, e farlo muovere.

(MANZONI, *I promessi Sposi*.)

III

GRAMMATICAL QUESTIONS.

1. Show and exemplify the various rules for knowing the gender of Italian nouns, and give the exceptions to those rules.

2. Give the plural of the following nouns and adjectives:—*Moglie docile ed operosa; Uomo pari; Tribù antica; Labbro tumido; Fior salvatico; Giusta libertà; Felice inganno; Amica fedele; Lungo miglio; Monarca possente; Tempio magnifico.*

N.B.—Show if any of the above have more than one form of the plural number.

3. Give the conjunctive personal pronouns for *to him, to her, of it, of them, to himself, it to him, and them* in both genders.

4. Write the whole present tense of the indicative of *dire, sapere, prendere*; the preterite of *chiudere, spegnere, uscire*; the future of *dolere, cadere*; the present of the subjunctive of *udire, fare, capire*; and the participle past of *vincere, scendere, correre, togliere, affrire, porgere.*

(*To be continued.*)

USE OF GREENWICH HOSPITAL.—INDUSTRIAL TRAINING.

The *Times*, of 4th October, prints the following letter; and, if the suggestions were carried into effect, an opportunity would be afforded to try intellectual and industrial training on an extensive scale, and to solve, perhaps, the most important educational problem of the day:—

SIR,—In the *Times* of the 2nd October, you conclude an article on Greenwich Hospital by asking, "Is there no good and national purpose connected with the Navy to which the Admiralty can now apply it?"

The answer I would make to this is, "Apply it to the education of the children of seamen of all grades in both the Navy and Commercial Marine." Admit the child of the poor lieutenant, or even post-captain, at cost price, say £20 a-year, for teaching, maintenance, and clothes. Admit also the child of the common seaman, at half this cost, or less.

Admit two, three, or four thousand children, with even infant schools, according to the extent of the accommodation.

With such numbers, the best education that can be given may be given.

You may have religion taught, not by a worn-out schoolmaster, but by a chaplain.

You may teach the English language, with reading, writing, arithmetic, drawing, drilling, and vocal and instrumental music.

You may teach French and other languages, and the elements of science.

By a proper distribution of time, and intermixture of intellectual and industrial occupations, you may accomplish both headwork and handwork better than only intellect is trained at most public schools.

And if you want evidence that this suggestion is not an idle one, you may find proofs in the district schools of Hanwell, Anerley, Sutton, &c.

Let the Admiralty set up this model school for seamen's children, and a model for the country in the masterpiece of Wren, and it will do unmixed good.

I am, Sir, your obedient servant,

FELIX SUMMERLY.

MINERAL STATISTICS OF ITALY.

In former times, mining industry was in a far more flourishing state than it is at present, as may be seen by the numerous traces of mines and abandoned workings scattered throughout the peninsula. The cause of this decline must, in some measure, be attributed to the discovery of rich mineral deposits in other countries, and the improvements which have been made in working them, and which have not been introduced into Italy. The following table will give an idea of the present state of this industry in Italy, and shows the produce of the mines and metal works in 1867:—

	MINES.		WORKS.	
	Quantities.	Value.	Quantities.	Value.
	kils.	frs.	kils.	frs.
Iron	148,471,900	2,033,460	54,791,100	24,855,125
Copper	16,075,700	1,593,627	1,032,600	2,764,574
Lead and silver	16,027,600	2,972,678	9,898,000	4,180,826
			7,000	1,537,935
Gold { ore	103,800	9,100	...	...
{ native	94	226,555	125	236,331
Mercury	7,600,000	57,000	23,000	91,840
Zinc	282,800	10,000	80,000	36,000
Antimony	100,000	50,000	50,000	60,000
Nickel	69,600	1,043	37,600	132,000
Iron pyrites	4,750,000	26,000	...	...
Manganese	1,898,000	60,558	...	...
Coal and other {	108,424,000	1,004,000	20,000,000	800,000
fossil fuel				
Sulphur	181,299,900	20,059,795	8,225,000	1,295,171
Totals	...	28,103,816	...	35,789,802

The most important mines in that country are those of iron. The quantity of ore extracted in 1867, was 148,471,900 kils., of the value of 2,033,460 frs., from forty-five mines, which employ 2,212 workmen during about 250 days in the year. The amount paid in wages amounts annually to 643,988 francs. About two-thirds of this production is from the mines in the island of Elba.

The imports of iron amount annually to 12,300 metric quintals, of the value of 59,250 frs.; and the exports to 101,850 quintals, of the value of 444,000 frs. The number of iron works where the ore is converted into iron is at present 299. Their production was as follows:—

	Quintals.	Value.
		francs.
First foundry iron	221,620	2,687,374
Second do.	83,298	2,991,763
Bar iron	166,612	6,322,890
Wrought iron-work ..	35,965	2,089,958
Steel	40,416	798,610
Machine, &c.	..	9,764,530
Total	547,911	24,655,125

The exports of iron and iron-work hardly reach in value 1,000,000 frs. per annum, whilst the imports amount to 42,321,000 frs., of which rails figure for upwards of eight millions, and seventeen millions of francs in bar-iron.

The quantity of copper ore raised from the thirty-four principal mines amounts annually to 160,757 quintals,

of the value of 1,593,627 frs. These mines employ about 2,412 workmen during from 250 to 300 days in the year, and their wages amount annually to 944,476 frs. The ore is smelted at twenty-five works, which produce 10,326 quintals of copper in cakes, of the value of 2,764,574 frs. The exports of copper amount annually to 4,911 quintals of raw copper, of the value of 1,326,000 frs., and 151 quintals of worked copper, of the value of 93,000 frs. The imports exceed six millions of francs.

The thirteen principal lead mines produce 160,276 quintals of lead ore, of the value of 2,972,678 frs., and employ 4,105 workmen, whose wages amount to 2,615,797 frs. per annum. In 1866, the exports of galena amounted to 20,000 quintals, of the value of about five millions of francs. The produce of the five principal smelting works amounts to:—

	Quintals.	Value. francs.
Pig lead	41,980	2,143,326
Lead worked	57,000	2,037,500
Silver	70	1,537,935
Litharge	112	5,800
Total		5,744,561

The number of workmen at these works was 775, and their earnings amounted to 346,000 francs. The following were the exports and imports of lead and silver, with their relative value:—

	Quantity.	Value.
Lead	33,168 quintals	1,851,800 francs
Silver	7,399 kils.	1,776,000 „

	Quantity.	Value.
Lead	14,718 quintals	796,300 francs
Silver	110,089 kils.	3,845,650 „

Gold is chiefly obtained from the auriferous pyrites of the Alps, and from the auriferous quartz of the Ligurian Alps. There are some gold mines in Piedmont, particularly the veins of auriferous pyrites of Macugnagna, at the foot of Monte Rosa, and although they do not contain ten or eleven grains of gold in a hundredweight, they have long defrayed the expense of working them. On the southern slope of the Pennine Alps, from the Simplon and Monte Rosa to the valley of Aosta, several auriferous districts and rivers occur. Such are the rivers Doza Baltea, Ticino, Po; and the Orco, in its passage from Ponte to the Po, has afforded much gold by washing. The hills, also, in the neighbourhood of Chidano contains gold spangles in considerable quantity; 94 kils. of gold, and 1,038 quintals of auriferous quartz, to the value of 235,655 frs., were obtained from 14 mines, the number of workmen employed in them being 642, and their wages amounting to 278,968 frs. There are 14 establishments for treating gold by amalgamation; these produce annually about 125 kils. of gold, for the value of 236,000 frs., and employ 80 workmen.

The imports of jewellery to Italy amounted to 3,325,000 francs in value, whilst the exports amounted to only 967,300 francs.

The only mines of quicksilver which are worked at present there, although several others exist, are those of Sicle, near Castellazara, in Tuscany, and at Agordo, in the Venetian provinces. The quantity of ore extracted from these mines in 1867 was 76,000 quintals, of the value of 57,000 frs.; and the smelting works produced 230 quintals of quicksilver, of the value of 91,840 frs. The number of workmen employed in the mines was 288, and in the smelting works, 22.

At Argentiera there is a zinc mine and smelting works; the quantity of ore raised was 2,828 quintals, from which 800 quintals of zinc were obtained, of the value of 46,000 francs.

About 100 tons of ore are raised annually from the antimony mine at Montanto, in Tuscany, and from this quantity about 50 tons of regulus of antimony are obtained, of the value of about 60,000 frs.

The quantity of nickel ore raised amounts annually to about 696 quintals, of the value of 1,043 frs., which yield 376 quintals of nickel, of the value of 132,000 frs. The cost of labour amounts to 5,060 frs. for the mines, and 17,217 frs. for extracting the metal.

There are three mines of iron pyrites in the province of Turin, which yield about 47,500 quintals of pyrites, of the value of 26,000 frs. The cost of labour amounts annually to 18,564 frs.

The four mines of manganese in the Val d'Aosta and at Spezzia produce yearly 18,980 quintals, of the value of 60,558 frs. The wages of the workmen amount to 42,204 frs.

The quantity of coal and lignite raised in 1864 was as follows:—

	No. OF MINES.	PRODUCTION.	VALUE.	LABOUR.	
				No. of Workmen.	Wages.
		quintals.	frs.		frs.
Anthracite ...	1	400	950	720	250,000
Lignite	20	415,533	472,000		

The following is the production, consumption, and importation of mineral fuel in Italy:—

	COAL.	LIGNITE AND ANTHRACITE.	PEAT.
	tons.	tons.	tons.
Production	5,638	41,593	66,831
Imports	474,239	..	..
Consumption	479,877	41,593	66,831

The exports of sulphur* from 1862 to 1866 were as follows:—

	UNREFINED SULPHUR.		REFINED SULPHUR.	
	Quantity.	Amount.	Quantity.	Amount.
	quintals.	frs.	quintals.	frs.
1862....	1,433,236	30,098,000	22,257	728,000
1863....	1,470,350	30,877,000	57,275	1,890,000
1864....	1,398,413	29,366,000	35,524	1,172,000
1865....	1,382,324	29,366,000	70,841	2,337,000
1866....	1,791,100	37,610,000	4,343	147,000
Average	1,495,084	32,326,000	38,050	1,255,000

In 1867 the total exports of sulphur amounted to 1,925,262 quintals.

The production of petroleum in Italy amounts annually to about 1,896 quintals. The imports in 1866 amounted to 123,620 quintals, of the value of 14,830,000 frs. An important establishment for the refining of petroleum has recently been opened at Recanati; and another at Turin has been at work for some time past, for refining American petroleum.

MOVEMENT FOR INTERNATIONAL ECONOMY OF MILITARY EXPENDITURE.

A special meeting of members of the International Statistical Congress at the Hague was held recently, in a hall attached to the second chamber of the States-General, to hear an address by Mr. Edwin Chadwick, in support of some resolutions, for the direction of the inquiries of the congress, for its next meeting, on the means of economising war expenditure. W. NEWMARCH,

* For the production of sulphur, see *Journal*, vol. xvi., page 390.

Esq., president of the Statistical Society of London, took the chair.

Mr. CHADWICK spoke to the effect following:—
 “Viewing the check to consumption, to demand, and to production, and the consequent manufacturing and commercial depression now prevalent throughout Europe; feeling the interruptions to education and training, and to science and art progress, by greatly needed public, civil, sanitary, and productive works; considering the heavy indebtedness of the great states; looking at the greatest and most grievous obstacle, the total of our respective budgets, for the maintenance of upwards of three millions of men kept under arms, in unproductive and commonly in demoralising conditions, in camps and cantonments, at an estimated collective expenditure of two hundred and eighty millions sterling annually in Europe, I venture to ask whether there is any topic on which the economists and statisticians of Europe can more usefully direct attention and researches, in their several states, than as to the incidents of this vast burthen and the means of reducing it. England may do this most befittingly, because her declared policy, her position, and her interests, as regards other states of Europe, is no longer offensive but simply defensive. Indeed it will be admitted, on impartial consideration, that her present army, considering the extent of her dominions and her colonies, may be regarded as in great measure a police force for internal security. The British army for all India is not much more numerous than that of France for Algeria alone. For defence, with our great volunteer force, we are secure. Our economical interests, our mutual economical interests, are, however, in the augmentation of the productive power, that is to say, in the augmentation of the purchasing power of our neighbours. But, indirectly, we pay commercially, more or less, towards our neighbours’ armaments, independently of the heavy amount we are made to pay by the augmentation of our own military expenditure, in rivalry of large adjacent offensive forces. If France could be led to reduce her military expenditure, and to devote the capital saved thereby to the real and complete conquest of the soil of France, that is to say, if by land drainage and other works, so much needed, she were to bring up her production, say of wheat, which averages less than fifteen bushels an acre, to that of England, which is now upwards of thirty-two bushels, we of England should gain by it; our exports to France and our imports from France would be augmented by it, and it may be submitted to opinion there, that her real military power, which is now dependent on financial power, would not be reduced by it. But it is futile to occupy ourselves with preaching the utopia of universal peace, or proceeding on the basis of the reduction—even the notion—of the mutual of military efficiency. In England we base our proposals of the economical reform of our military expenditure on the maintenance or the augmentation of our military efficiency. Opinion is not yet, I believe, advanced beyond that. Now, I present an example of one topic for examination and consideration on that basis. In a branch of administration with which I was connected, I, some twenty-five years ago, advocated the introduction of military and naval exercises in a number of the primary schools of destitute orphan children, maintained at the public expense under our administration, and they were so trained under my principle of the half-school-time system. At the period of the last congress in England I endeavoured to call international attention to the experience obtained in those institutions, one military point of which was, that we could impart a complete military and also a naval drill to upwards of 130 boys well, at an expense of keeping and drilling one adult comparatively ill, and we find that when these drilled boys enlist, they are commonly accepted by the non-commissioned officers as having been in the ranks before. Whatsoever differences we may have with military men on army reform questions, we have hardly any on this. We

have the highest military authorities with us on this measure as a means, amongst others, of promoting a more extended and higher order of voluntary recruitment. Besides good military qualities, the military exercises in the school stages have been found to impart qualities of so high an order for civil work, giving to three the efficiency of four or five for all ordinary labour, as to make the general adoption of the exercises worth while as a pure matter of civil economy. The evidence I collected on this topic was promulgated in some parts of Canada and in the United States, and has led to the introduction of the practice there, and its extension to all the primary schools is now a pending question of educational administration. In some parts of Switzerland military exercises have long been made part of elementary school-training. Under an enlightened educational administration in France it has recently been obtained that military exercises shall form part of the training in all the Lycées, the secondary schools, comprising some forty thousand children; and the like progress is making here in Holland. Now, may we not well obtain statistics of the extent of those efforts in the several states, and of how much is yet to be done, to extend the practice to all primary schools—to the whole of the rising generations? And may we not then advance to the great economic question, how far the full exercises practicable in the non-productive school stages may serve to reduce the large amount of time now occupied in the productive adult stages of life? Such observations as I have been enabled to collect in England warrant the expectation of a considerable reduction of the period of adult training for military service, more than half of that in use in Prussia, and the greatest proportion of that in use in France; and consequently a great reduction of military expenditure, and that, too, with an increase instead of a reduction of military efficiency; I say an increase of military efficiency, for it is to be observed—what military men, used only to old systems, are with us slow to note—that the new arms of precision require a higher order of education and intelligence to wield them most effectively. The officers of our training schools, and of the volunteer army, declare that the order of merit in shooting is very much as the order of intelligence of the shooters. A further question appears to me to arise, from consideration and discussion, viz., whether as a stimulus to serious attention in the schools, exemptions, or reductions of the periods of forced service, may not be shot for and competed for by exercises in attainments? Prussia has, I understand, made a good advance in that direction, by allowing reductions and exemptions from forced service to be competed for, on proof of attainments. In England, economical opinion, as elicited at late discussions at our Society of Arts in London, points at the substitution of a popular and numerous army, with a scientific cadre, on the basis of the Swiss army, for the less numerous, but far more expensive standing army. Mr. Henry Cole showed that, on the basis of the Swiss army, and with a good scientific cadre, we could obtain a popular army of a million of men for ten millions of money as against an inferior standing army for which we now pay fifteen. We hope that popular opinion will support our present Prime Minister, Mr. Gladstone, in effecting in that direction important economies, which are needed in our financial condition. The progress of constitutional government in France and on the Continent will, we may trust, favour the substitution of economical popular armies for large expensive standing armies. And in favour of this policy, and of basing military force on a higher order of education and intelligence, which will more readily adapt itself to the great changes which science is making in war, economists may observe, what old military men are very slow to acknowledge, that, whilst the new arms of long range and precision, and penetrating power and rapidity, give one to offence, they give two and more to defence. We have recently

had some decisive experimental proofs of that with artillery. Mr. Whitworth's smallest new gun, a three-pounder, has a longer range than the heaviest of the old field guns in our service. Asking one of our old generals how it would have been had that gun been available for Waterloo, he answered that that battle could not have been fought with front lines within half the range of its shell; and, with the necessity of keeping reserves at such distances as to be out of its reach, that they could not be brought up over the open plain. A military writer of an important article in the *Journal des Economistes* adduces military reasons (which able military men have told me they consider to be good) to show that, with the new arms of precision, an army of a hundred thousand men, trained to their use, may defend France effectually against invasion. That being so, since France needs little more than one-fifth of her present army for defence, and as a cadre, indeed, for more than that, would it not be better for her to apply the great expense of the unproductive maintenance of the other four-fifths, which science renders now unnecessary, unless for immediate offence and menace, for the extension of her dominions by conquest by war, to the conquest of her own dominions by the due development of its great resources? Will it not be better for her to double the yield, as is practicable, of her own soil and its resources, by high and, what I call, intensive culture, than to obtain a double yield from extended and thin culture if by conquest, for augmentation by conquest, except at ruinous loss, is no longer practicable as against nations armed by science. Science, which gives one only to France for offence, gives as much as three to Belgium, three to Switzerland, three to Holland and to each of the surrounding states, for defence, if their governments have the wit to avail themselves of science. The hundred thousand men, that, with science, will suffice for France, will, with science, if she chooses to avail herself of it, suffice for Belgium. Little Belgium is by the new science made big, and may now "talk tall" as to with whom she chooses to cast her lot. So little Holland is, by the new arms of defence, made great, and may keep herself to herself, or dispose of herself as she pleases. In respect to offensive naval warfare, I may mention that my friend Mr. Whitworth (who always does more than he says he will do) says he has now got a gun he calls a "peacemaker," which, with a hundredweight of powder, will throw a shell of fifteen hundredweight more than five miles, with superior accuracy, that will penetrate twelve-inch armour plates. Little Holland, therefore, with one such gun, in a small and quick-moving boat, which is relatively small mark, may keep at a respectable distance our large *Warrior*, or the large and slower *La Gloire* of large France, or the small boat may send an enormous and fatal shell, which will penetrate the six-inch armour plates of either. Other existing guns will indeed go through all existing armour plating. Science places the war administrations of large countries in the position of having incurred enormous useless expense for what is like a return to plate armour for the foot soldier, or for the cavalry soldier, as against the new small arm, the Whitworth rifle, which, with a steel bolt, will go through three men in armour—three of the heaviest-armed cuirassiers. Indeed, for that matter, our military reporter on the small arms at the International Exhibition admits, in effect, that he who now flourishes a sword flourishes a folly, for combat against a six-shooting revolver. Science suppresses the old panoply of war, and makes fools of sabreurs. Civilian opinion is needed on this great question, because old military men (and young ones too), military writers, hate what they do not possess—new science. They resist it as an enemy; they contend against its advance determinedly; they yield to its introduction grudgingly; and as yet it has only been introduced into any army—even the Prussian army—most reluctantly and sparingly, and its real and advancing power has yet to be displayed and made

known. You see accounts of sham-fights and field manoeuvres which are indeed shams, for such movements as constitute such manoeuvres are now rendered by science all but impossible. What chance has now the cavalry man, with his walk, trot, and gallop, for a charge against the improved long range breech-loader, which discharges twenty shots a minute? or when he, by marvel escaping, gets near, against the six-shooting revolver, which, almost in as many seconds, will deliver three shots into himself and three into his horse? It was admitted by French military men that, in the Italian campaign, charges of cavalry were found impracticable against the then inferior arms of precision; and if it were so, what would it be with charges of infantry? How would it be with those closed columns for rushes to carry bridges, against the new cannon with improved long range shell, and grape and canister? What plumed and starred commander will now defy science, and lead them, à la Murat, in real warfare? Governments have military attachés at their embassies, who have to report examples and invite extensions of military expenditure. What is wanted is competent and impartial international observers and reporters of the means of economising force and expenditure in the respective states. One other economical topic I will notice in the way of illustration. It is admitted that the future of war, since men will not readily be got to stand up to be mowed down, as heretofore, by these new guns, small and large, of long range and precision, will be very much a war of earth-work, and of engineering. Now it is proved, by our Indian and other experience, that officers as well as privates are the better prepared for such warfare who are the most occupied in civil works in time of peace. Sweden, I believe, affords an important example of a large economy of military expenditure, by the extensive occupation of her army in civil work. Even France, to my knowledge, has recently afforded a brilliant example of the kind, by the occupation of a portion of her army in Algeria with the drainage and improvement of land, for civil as well as for military occupation, has removed fever nests, and reduced the death-rate of *her army* there to one-fifth of what it was, and has set a good example for our use in India, as shown by an English military commission. Is it not then becoming for economists and statisticians, representatives of international opinion and interests, to collect, examine, and discuss the statistics of such important economies? The congress did enter somewhat into military questions, those chiefly of military hygiene in London, where our lamented colleague, Dr. Boudin, of France, presented very valuable information on the sanitary means of economising military force, now in very successful progress. I had the honour, at the Congress of the Association for the Promotion of Social Science, to read a paper on the need of better care of the sanitary condition of our soldiers in India, for the maintenance of our force there. This led to the appointment of the army sanitary commission for India, which has led to large reductions of the death-rates there, and to works of great importance for the benefit of the people of India. A special congress, on military hygiene chiefly, held at Geneva, was not without international fruit, as it led to an agreement to the mutual recognition of the distinctive dress of medical officers for their service in battle. Indeed, the great Emperor of Russia—the liberator of the serfs—in whose domains we may hold our next congress, has taken one step for an international agreement for the reduction of the horrors of war, by an agreement not to use shell with small arms, and thus avoid horrible and unnecessary mutilations. As it may be due that I should submit notices of definite topics for consideration, I beg respectfully to submit the following." [The resolutions moved were that the congress should move for the collection of statistics from the respective states, as to the extent to which military exercises had been introduced into schools and

the results; as to the extent to which reductions of the time of military service, or exemption from it, had been allowed on competition or proof of capacity; as to the extent to which the scientific cadres or private soldiers had been employed on civil work, or in private service.]

Mr. R. RUGGLES, of New York, the delegate from the United States, had the greatest pleasure in supporting the resolutions. He thought it would be well that the important address they had heard should be translated and circulated in every language in Europe, showing the changes of condition that science had made. Mr. Chadwick's proposals would save perhaps one-half of their military expenditure, and the object of science, and therefore of the congress, was to save useless labour. The world wants all its money, and much for education to make it wiser and better. Whilst the European monarchies imposed upon the people the burthen of the maintenance of three millions of men as standing armies, the people of the United States would have none of that waste, or the least possible part of it. To suppress the horrible rebellion, and to extirpate the great cancer of slavery, they had raised an army of a million of men, taken from the forge, the desk, and the counter; and to the plough, the desk, the counter, and the forge, all that had not sacrificed their lives for the cause returned, except, as he was informed, about thirty thousand men, whose services were needed against the savages who tried to impede progress on the Pacific railway, and elsewhere. The war had cost them upwards of seven hundred and fifty millions sterling, and it was worth the money, and they would pay every dollar of it, but to do so they must not impoverish themselves and weaken themselves for the future as Europe did, by standing armies.

Mr. VISCHERS, the delegate from the government of Belgium, declared himself in emphatic terms entirely in accord with the views set forth by Mr. Chadwick, and supported the resolutions.

Mr. W. T. NEWMARCH, of England (the son of the Chairman), gave an account of the successful results of the training of a corps of skilled mechanic volunteers, belonging to a manufactory on the River Tyne with which he was connected. Royal military engineers declared the military superiority of these men to the common run of men in their corps of sappers, in intelligence, zeal, and aptitudes. The exercises were beneficial, morally, socially, as well as civilly.

Mr. MAX WIRTH, the delegate from Switzerland, in giving his warm support to the proposals, described the military system of the cantons as deserving of inquiry and study for its economy.

Dr. BERG, the delegate from Sweden, gave an account of the economy of the army of Sweden, only a small proportion of which was under colours at one time, the rest being employed in civil works and in productive industry, some being allotted lands for cultivation on the tenure of military service. The inquiries proposed were of the highest international importance.

Mr. VALPY, of the statistical department of the Board of Trade of England, stated that the military expenditure in most countries in this time of peace equals one-third of their whole taxation. Great as might be the economy of Mr. Chadwick's measure, of the transference of a great proportion of the expenses of military training from the adult to the juvenile stages of life, he (Mr. Valpy) considered that the advantages of the training, in augmenting the intelligence and physical aptitudes of working men, would be yet greater.

Mr. VAN KARNEBECK, of the War Department of Holland, supported the propositions, but he assured the meeting that his government was proceeding in the way indicated by Mr. Chadwick. In the secondary schools military exercises were now provided for. Military men only asked for time—for delay, and he thought they were right in doing so.

After some discussion, in which Mr. Hammick took

part, the chairman strongly supported the resolutions, which, with modifications, were carried unanimously. A committee, consisting of Mr. Chadwick, Dr. Berg, and Mr. James Heywood, was appointed to submit them to the consideration of the general meeting of the congress. At that meeting on the following day, they were presented in a speech by Mr. Chadwick, and were warmly received and adopted, the Prime Minister of Holland applauding them.

FINSBURY MIDDLE-CLASS SCHOOL,

The successful effort of the Rev. W. Rogers, rector of Bishopsgate, and Master of Dulwich College, to establish a reasonable and economical day-school for the lower middle classes, has lately produced the establishment of permanent buildings for the schools, which are thus described in the *Times* :—

"This building, erected under the auspices of the Council of the Middle-class School Corporation, established in the city of London a few years ago, and the foundation-stone of which was laid with modest ceremony in December last, by the present Lord Mayor, is now on the eve of completion, and, in many respects, is worthy public notice. It is designed to accommodate 1,000 boys of the class indicated by its name, of whom 850 have already entered upon the occupation of the building, under the superintendence of the Rev. William Jowitt, the head-master, and is destined, we hope, to be the first of a series to be planted in various parts of this great metropolis, under the fostering care of the same corporation, for carrying on the work of education among a large section of the community which has long been comparatively neglected in that respect—the lower middle-class, as it is often called. The new school is situate in Cowper-street, a little to the east of the City-road, and a few minutes' walk from Finsbury-square, which street it fronts, and is bounded on the east and south by Tabernacle-row and Tabernacle-walk, long and still associated in the public mind with the ministrations of the Wesleys and Whitfield. It occupies, with its adjacent playgrounds, nearly two acres of ground, and is a substantial lofty structure of brick, three stories in height, exclusive of the basement. It is in all respects admirably adapted to its requirements, but has little or no pretensions to architecture in the ordinary acceptance of the term. Every thing in the nature of ornamentation appears to have been eschewed for the greater advantages of light, ventilation, and drainage. It may be said indeed to be severe to a fault in regard to simplicity, and yet, as a whole, it is symmetrical and imposing, especially when compared with the surrounding neighbourhood, to which it is really an ornament. Broad corridors, accessible by wide stone staircases at each end, traverse the whole length of the building on each floor, and the basement is used for dining and kitchen purposes; the dining-hall alone, which is lofty and well-lighted and proportioned, being sufficient to accommodate 500 boys at a time. There a hot dinner is provided daily, at 6d. a-head, for such of the boys who choose to avail themselves of it. The most of the class-rooms afford space for 50 boys each, and there are rooms of larger proportions adapted for lectures. Towards the fitting up of those for scientific purposes, the trustees of the Gilchrist Educational Fund have voted £100. There are other apartments on the top floor, partially lighted from the roof, and, therefore, well suited for the study of drawing. Attached to the building is a playground about three-quarters of an acre in extent, with a gymnasium, and other arrangements, dependent at present upon the expectation of funds, are contemplated with a view to recreation. A hall is still required in which, on special occasions, not only the 1,000 boys being educated in the school from time to time may be assembled, but also their parents and friends. The humanising influences of good lavatories has not been forgotten in the internal

arrangements, and the head master looks forward to the time, not, he hopes, far distant, when the grounds will be adorned with handsome fountains. A playground, as all know, is a most important element in the educational influences of a school, and a portion of the area set apart for that purpose remains to be covered in for the use of the pupils in wet weather. The school is erected on part of the Finsbury estate, of which the Corporation of London long held a lease, but which has now lapsed to the Ecclesiastical Commissioners. The freehold of the site of the school has cost £30,000, and the structure itself about £16,000. The architect is Mr. Edward Norton Clifton, of East India-avenue, Leadenhall-street; the builder Mr. William Brass, and Mr. Vincent has acted as clerk of the works.

"The experiment of a middle-class school, on the principle contemplated by the council, was first tried for three years in the old French Protestant Hospital in Bath-street, City-road, and its success was so marked as to justify them in erecting the present building, with the intention of carrying the idea out on a much larger scale, and one commensurate with the evident and growing want of education among that section of the community. From the original 'hive,' as the head master calls the school in Bath-street, the boys have been allowed to swarm, in a hundred at a time, to the new building, until, as we have said, it now contains 850, and the remaining 150, making up its full complement of 1,000, will shortly migrate thither. It may be stated that the age of admission is eight years, and none are eligible, under any circumstances, after the age of 15. Very satisfactory references before admission are required from the former schoolmasters of a boy coming at all after the age of 13. Latin is not a part of the regular curriculum, but it, and German, and shorthand are taught at a small extra fee per quarter to such of the boys as desire to learn one or other. The council, having regard to the probable destination of the great majority of the pupils, lay great stress upon teaching them their mother-tongue as a first requisite, and, next, arithmetic, mathematics, French, music, and drawing. They endeavour to impart to them a good critical knowledge of a play of Shakespeare and of a canto in Spencer, and to teach them to use their own language with precision and judgment. In this work, the head-master, who is a host in himself, is assisted by 20 others, and the school has already acquired a high reputation. The boys come from all parts of the metropolis and its suburbs to the school—many of them by the North-London, the Metropolitan, the Great Eastern, and other railways. In one case the railway authorities allow them to travel on their lines at reduced fares. Already the institution has a history and a corporate life of its own, akin to those of the old public schools, and one of its great recommendations is that the education imparted in it is combined with residence at home and with family associations and influences."

Fine Arts.

INTERNATIONAL CONFERENCE ON GENERAL INSTRUCTION IN ART.—The Union Centrale des Beaux Arts Appliqués à l'Industrie has taken advantage of the remarkable exhibition now open, under its management, in the Palais de l'Industrie, in the Champs Elysées, to hold a conference within the same building, to discuss the subject of general artistic instruction in the primary and superior schools; and, in order to give a more general scope to the conference, invited the attendance of gentlemen from other countries who are connected with, or interested in, art-education. The invitation was well responded to, and during four successive days from fifty to sixty professors, artists, art-manufacturers, and others, including a few representatives from England, Austria, Germany, Belgium, Russia, Italy, and perhaps

some other countries, met and discussed the subject with great earnestness and talent; and a series of resolutions have been drawn up, which will shortly be published. It may be said that the efforts made in England, with the view to instruction in art, supplied material for much discussion, and it seemed to be generally acknowledged that Great Britain had found, and was following, the proper path. The Union has done much towards furnishing means of improvement for designers and art-workmen, but it is not satisfied with the results it has achieved to the present moment, and hopes that, by giving the movement an international character, it will attract more attention to this important subject of art-education than it could otherwise hope to obtain.

Commerce.

REVISION OF THE COMMERCIAL TREATY BETWEEN FRANCE AND ENGLAND.—The representatives of the mining, metallurgical, and cotton interests, in the western, northern, and north-eastern provinces of France, have made great complaints to the government of the asserted effects of the existing and expiring commercial treaty between England and France, and full inquiry has been ordered to be made on the general results of the application of the principles of free-trade, and of their partial adoption in France. It may be safely assumed that such an inquiry can have no other result but the proof of the groundlessness of most of these complaints; but as it is certain that the most energetic endeavours will be made by M. Thiers, and other prominent members of the Corps Legislatif, to cause the treaty in question to be abrogated, or at least materially modified, it is most important that the facts of the case should be brought clearly to light, and that the progress towards free-trade made by the imperial government should not be interrupted by the one-sided statements of interested parties. It is not believed by anyone that Napoleon III and his ministers will retrace their steps, and the inquiry will, it is hoped, furnish them with all-sufficient reasons for further reducing some of the still heavy duties which weigh upon commerce.

ALTERATION OF SPANISH EXPORT DUTIES ON ORES AND METALS.—A complete change has been made in the regulations respecting the exports of metals and minerals from Spain. Even the recent order of the Regent, issued in July, has been abrogated, and the only duties now levied are as follows:—Galena, about 6d. per cwt.; silver lead ore, about 5d. per cwt.; litharge, about 4d. per cwt. This is the end of a vicious system, which has always stood in the way of commercial progress, which it is hoped will never again be brought into practice.

Colonies.

QUEENSLAND GOLD FIELDS.—The following is taken from the report recently published by the late Assistant Geologist and Mining Surveyor of Queensland:—"The Gympie gold-field is situated on the Mary River, about thirty-five miles south of Maryborough, and thirty miles from the coast. The area comprising the diggings consists of a succession of low ridges, spurs, and gullies of a rounded character, presenting no steep inclinations or sections. This is surrounded on all sides by higher ranges bearing the same general character. The surface is covered with bush and grass, except in the gullies, where there is a dense scrub. This gold-field, no doubt, contains the greatest known number of quartz reefs within a given area, and at the same time a variety of rocks. Prospectors' claims have been granted for 175 reefs, ten of which have proved to be distant communications of the same reef, leaving 165 as the real number

of the reefs known and worked, comprising 1,200 claims. These are mostly contained within an area of $4\frac{1}{2}$ square miles, within a belt of three-quarters of a mile in width, and six miles in length, bearing N. 40 deg. W., to S. 40 deg. E. This belt or zone consists of a series of strata of greenstone shale and slate rocks, differing in mineral composition and texture, but exclusively of a basic variety of rock. Skirting this belt on both sides is a series of silicious slates and quartzites, highly metamorphosed, and in many places jasperised, banded, and cleaved. In this latter formation no gold has yet been found, although many reefs have been explored. The reefs vary in thickness from a few inches to six feet. The gold is found in irregular masses, plates, wires, curved and resembling roots of trees. It is also found as a cementing mass, joining several pieces of quartz together, as well as finely disseminated through the stone. Rich finds and specimens are very numerous, and yields of 30 oz. to the ton are not uncommon, the average being above 1 oz. per ton. The gold is all amorphous, no absolute crystals or faces of crystals having yet been found. The quantity of gold forwarded from Gympie by escort already exceeds 100,000 oz., of which above half was obtained from alluvial workings. As regards the permanence of gold, I am of opinion that a certain number of reefs have now been fully proved to be continuous in depth, both in respect to the thickness of the reef and the quality of the stone in the lowest workings. Several shafts are now 120 feet deep, or 60 feet below the permanent water level."

BISMUTH IN SOUTH AUSTRALIA.—A valuable discovery of bismuth ore is said to have been made near Balhannah. Some workmen were engaged in opening up the hill-side in search of a copper lode, believed, from surface indications, to exist there, and attention was directed to the weight of the stuff dug up. A number of specimens were examined, and they proved to be bismuth of a very rich description, and only impregnated with copper to a very slight extent. On assaying, about $1\frac{1}{2}$ lbs. of stuff, 1 lb. 3 oz. of bismuth, in its rough state, was obtained. When purified, this yielded at the rate of 5 per cent. At present the property has not been sufficiently developed to prove the extent of bismuth-bearing country, but a company has been formed to conduct the necessary operations.

REVENUE OF VICTORIA.—The following statement shows the total revenue of the colony for the quarter and year ended 30th June, 1869, as compared with those of 1868:—

	QUARTER.		YEAR.	
	1868.	1869.	1868.	1869.
Customs	£298,284	£357,184	£1,376,140	£1,356,794
Territorial	148,515	195,551	678,643	821,417
Public Works	164,872	168,335	624,514	676,512
Postage	28,892	31,142	112,489	119,214
Fees	16,806	18,372	61,472	66,778
Miscellaneous	4,049	9,439	40,360	70,672
Ports and harbours ..	2,528	3,823	15,659	18,516
Fines	869	1,423	4,869	5,094
Excise	14,489	12,599	57,665	66,594
Total	£679,284	£797,868	£2,971,811	£3,201,591

The above returns show an increase on the year of £229,783. The duty on spirits show a deficiency of £127,824, but the new duties show an increase of £92,916. There is also an increase of about £9,000, and on the territorial an increase of £142,774, of which £72,368 is derived from the sales by auction.

PEARLS FROM WEST AUSTRALIA.—The *Melbourne Argus* states that a number of fine pearls, discovered at the fisheries carried on in the vicinity of Nicol Bay, have been exhibited in the town. They are of great size and beauty, the most valuable among them representing, in shape and dimensions, the eyeball of a large fish. This is said to be worth upwards of £200. This collection of pearls is the richest which has been found in Australian waters.

RAILWAYS IN VICTORIA.—The following statement shows the gross revenue of Victorian railways, from the 1st of January in the following years:—

	£	s.	d.
July 13th, 1865	287,597	10	5
" 12th, 1866	293,512	14	4
" 11th, 1867	274,338	16	4
" 16th, 1868	297,426	5	11
" 15th, 1869	304,408	13	7

The aggregate returns of the Melbourne and Hobson's Bay Railway Company amount to £69,349 9s., from the 1st January to 1st July, 1869, against £67,309 17s. 3d. during the corresponding period of 1868. This, as well as the government railways, shows a very satisfactory increase.

Publications Issued.

NOTE BOOK ON PRACTICAL SOLID GEOMETRY, containing problems, with help for solutions: by J. H. Edgar, M.A. (*Macmillan and Co.*)—This book is a collection of examples progressively arranged, with help for solutions. It is intended to assist teachers who have to deal with large classes, and students who desire to continue their class-work by themselves. It has been prepared with special reference to Professor Bradley's "Elements of Practical Geometry."

Forthcoming Publications.

NATURE: a weekly illustrated Journal of Science (*Macmillan and Co.*) is about to appear this month; royal octavo, 24 pp. weekly.—The object which it is proposed to attain by this periodical is stated as follows:—It is intended, first, to place before the general public the grand results of scientific work and scientific discovery, and to urge the claims of science to a more general recognition in education and in daily life; and, secondly, to aid scientific men themselves, by giving early information of all advances made in any branch of natural knowledge throughout the world, and by affording them an opportunity of discussing the various scientific questions which arise from time to time.

A HANDBOOK OF BRITISH FUNGI. By M. C. Cooke. (*Hardwicke*).—This work will be in one volume, small octavo, and will contain full descriptions of all known species of British fungi, with illustrations of the principal genera, and references to figures of the species. The publication will be commenced as soon as the names of sufficient subscribers (at half-a-guinea each) have been received to warrant the undertaking.

THE ACADEMY. Demy 4to. (*John Murray*).—The first number of a new periodical under this title is advertised to appear to-morrow; a monthly record of literature, learning, science, and art.

Notes.

EFFECTS OF IDLENESS AND WANT OF EDUCATION IN THE ARMY.—The report on military prisons is made, this year, by Captain Du Cane, as inspector-general. He has not had a very satisfactory account at present. The average number of effectives in the army was 186,508, and the number of convictions increased to 25,612, or 13·73 per cent. The number of corporal punishments, however, decreased to 36, or 0·01 per cent. The number of soldiers sent to military prisons at home was 5,470 in 1864, 6,390 in 1865, 6,520 in 1866, 6,674 in 1867, 7,553 in 1868; these numbers being 6·97 per cent. of the force in 1864, 7·98 in 1865, 8·18 per cent. in 1866, 8·01 per cent. in 1867, 8·88 per cent. in 1868. The daily average number in confinement in military prisons at home was

1.27 per cent. of the force in 1864, 1.29 per cent. in 1865, 1.25 in 1866, 1.29 per cent. in 1867, and 1.24, or 1.47 per cent., in 1868. The report states that drunkenness forms a considerable item in the list of crimes causing the increase of prisoners; this offence is now to be punished, as in civil life, by fine. Prominent among military offences stands that of desertion, for which 1,776 of the 7,553 sentences were passed in 1868. Captain Du Cane represents that, as one considerable cause of desertion is the desire to get bounty by re-enlisting, a remedy might be found in the abolition of the bounty system, or in payment by instalments as the man becomes efficient, or on inquiry into his antecedents. The army might thus be relieved of men of hopelessly bad character, who, passing much of their time in prison, are useless as soldiers, and nothing but a disgrace to the profession. He maintains it is not beyond the bounds of a reasonable hope, that a time is coming when it may be possible to refuse or dismiss men of marked bad character. The advantages a soldier enjoys in pay or its equivalent, with the training he receives, and the prospect of employment on honourable discharge which such training may procure for him, are high enough to constitute it a real misfortune for men of the class to which the soldier belongs to be deprived of them. It is believed that this feeling is gradually being realised by the soldier, and that in many districts it is understood that a man who enlists is well started in life. The more a soldier is made to see that the army may be a stepping-stone to future remunerative employment, the more likely it is that dismissal will be a sufficient punishment. Captain Du Cane has to add that the governors of military prisons generally concur in the opinion that insubordination increased in the army in the past year, and that the increase is evidenced by the number of men charged with that offence received at the prisons, 608 in all; the number is now for the first time distinguished in the returns. The governor at Aldershot reports that a prisoner being checked at drill by one of the warders, wished that "God Almighty would strike the warder dumb;" the prisoner himself was struck dumb on the spot, and did not recover his speech for seven days. He was very much frightened, and on recovering speech, made great promises of amendment; but his good resolutions vanished, and he was soon in prison again. The report presents the usual tables, one of which shows that the increase in the number of prisoners, in 1868, was chiefly in men who had served between seven and fourteen years in the army. 2,070 of the prisoners had served not more than two years, 1,870 between two and seven years, 3,244 between seven and fourteen, 327 between fourteen and twenty-one, and forty-two above twenty-one years. The stoppages of pay and beer money of prisoners while in confinement amounted to £30,323; the total pay of prison officers and charge of maintenance of the prisoners was £27,750. The average length of sentences was fifty-nine days.

CONCRETE BUILDINGS.—This mode of building is gradually attracting attention in this country. The *Builder* has the following notice of some buildings lately erected in Southwark on this system:—"Some time ago we alluded to the erection of a large warehouse, wholly of concrete, in Great Guildford-street, Southwark. We have recently visited it, and find it standing remarkable well. It was built by the owner, Mr. H. Goodwin, Mr. E. P. Anson being the architect. Mr. Goodwin, who is laying himself out to execute other buildings in this material, has given us some particulars of the work, which may be usefully printed:—"The concrete is composed of one part of best Portland cement to seven parts of material consisting of clean Thames gravel, crushed slag and clinkers from furnaces, crushed bricks, stone chippings, oyster-shells, pottery, hard core from dust yards, and any other hard and incombustible material I could get. After waiting twelve months for the Metropolitan Board of Works to consider whether or not Portland cement concrete was applicable to

building purposes, I at last got consent to proceed with the work. We built upon an average per day about 12 inches all round the walls, grouting in with sand and cement at every fresh layer of concrete. We also put in hoop-iron bond at each floor. We could have built 18 inches per day, which is the depth of the apparatus, but I considered 12 inches quite fast enough for a building so high; though at other smaller jobs I have often built three feet per day. The building is 70 feet by 50 feet, and 60 feet high. It consists of basement and five floors, each floor supported by twelve iron columns. The roof is of concrete three inches thick, laid between tee-iron three feet six inches apart, covered with asphalt. The thickness of the walls is to the brick rule—those 70 feet, two floors 27 inches, two floors 22 inches, and two floors 18 inches; the 50-feet walls are, two floors 22 inches, and four floors 18 inches. The cost of the walls, considering I got a great deal of the material for nothing, was under £6 per rod; or, take the whole of the building as a cube, the cost was about 3d. per foot. It is very strongly built, and as good as one of the warehouse class can be. It is now loaded with goods, every full, and has never shown the slightest crack or settlement. It is harder than most kinds of stone used for building purposes, and is of one solid mass from beginning to end. While in course of construction, I was honoured by visits from many members of Parliament, most of the members of the building profession, and many other gentlemen, who took much interest in this great test and experiment in building, as well as by yourself. The concrete villa at Addiscombe-road, Croydon, is now completed and occupied; it gives great satisfaction, and, it is said, will be the only house the rain will not penetrate in that neighbourhood. The lower floors are all of concrete, and perfectly smooth and warm; there is no channel for a mouse or any creeping thing in that house, unless it take up its abode with the family."

TELEGRAPH STATISTICS.—The following statistics relating to telegraphs in Europe have been published by the Prussian government. From this it appears that in Switzerland there is a telegraph office to every 8,000 inhabitants; in Belgium, to every 12,000; in England, to every 13,000; in Holland, to 18,000; Italy, to 24,000; Prussia, 28,000; France, 31,000; Portugal, 32,000; Austria, 42,000; Spain, 77,000; and in Russia, to 185,000 inhabitants. In Holland there is one telegram a year to every 3 persons; in Belgium, to every 4; in Switzerland, to every 4; in England, to every 6; in Italy, to every 7; in Portugal, to every 9; in Prussia, to every 12; in France, to every 13; in Austria, to every 17; in Spain, to every 21; and in Russia, to every 69 inhabitants.

Correspondence.

AMSTERDAM INTERNATIONAL EXHIBITION.—SIR,—As the nature of some of the awards made at the exhibition is not thoroughly understood, and I find it impossible to answer all the letters I receive from exhibitors or their agents on this subject, I beg to furnish the following explanation:—The official regulations for the guidance of the international jury, appointed by the King of the Netherlands, prescribed that the objects shown were to be exclusively judged in reference to their importance as regards the material and intellectual wants of the working classes—the exhibition having been specially originated as one of articles of domestic economy. The awards placed at the disposition of the jury for recognising merit were—1. Grand diploma of honour; 2. Gold medal; 3. Silver medal; 4. Bronze medal; and 5. Honourable mention. As many other objects were allowed to be admitted by the Netherlands Commission, not specially suited for the working classes, the jury were authorised to award to these latter a diploma of excellence, corres-

ponding in rank with the gold medal, or a mention *extraordinaire*, equivalent to a silver medal. It was, of course, extremely difficult to draw the strict line of boundary as to what was, or was not, specially suited to the working classes, especially in the case of wines, spirits, liqueurs, &c., and many exhibitors unfortunately sent principally expensive classes of goods, mixed with only a very few cheap articles, preferring to address themselves to a better class of customers than those for whose material welfare the exhibition was originated. As, however, every facility was given, in reduced or free transit, and no charge was made for space, while very large sales were in most instances made by exhibitors, there are very few who have reason to complain.—I am, &c., P. L. SIMMONDS, British Commissioner, and Member of the Central Jury.

Exhibition Palace, Amsterdam, Oct. 6th, 1869.

MEETINGS FOR THE ENSUING WEEK.

WED ...Microscopical, 8. 1. Lieut.-Col. Woodward, "On Immersion Objectives and Roberts's Test Plate." 2. Mr. Wm. Carruthers, "On the Plants of the Coal Measures."

Patents.

From Commissioners of Patents' Journal, October 1.

GRANTS OF PROVISIONAL PROTECTION.

Animals, machinery for clipping and cleansing the hair of—2611—W. H. Reade.
Beds, &c., machines for twisting and curling hair for use in stuffing—2734—P. Wisdom.
Boots and shoes—2615—W. S. Clark.
Buckle and button-hole combined—2693—G. Shaw.
Buildings, &c., movable partitions for the interiors of—2651—D. J. Williams.
Cages for birds, &c.—2699—C. Mohr and S. E. Smith.
Candles, &c., treating fatty and oily matters to prepare them for the manufacture of—2679—O. Burke.
Carriage doors, fastenings for—2713—T. and W. Wheatley.
Carriages, axles for—2581—J. Grice and J. G. Harrison.
Cartridges—2659—A. H. Brandon.
Cartridges, holder for—2691—P. M. Fonque.
Casks, &c., bushes or shields for the bung-holes of—2653—J. Gillies.
Chains—2736—C. E. Brooman.
Cigars, manufacturing—2661—W. Morris.
Coffins—2518—J. D. Nietzsche.
Copying presses—2738—C. E. Schoeller.
Cotton, &c., machinery for preparing, &c.—2680—R. Lakin and J. Bayley.
Cotton-wool, &c., instrument for obtaining samples from bales of—2717—M. Amberg.
Doors and windows, apparatus for preventing accidents through the closing of—2681—C. D. Abel.
Electric batteries—2655—H. A. Bonneville.
Electric telegraphs, &c.—2728—S. A. Varley.
Electro-telegraphy—2643—T. Walker.
Envelopes—2683—M. Grouse.
Felt and other cloths, machinery for the manufacture of—2697—W. E. Newton.
Fire-arms—2711—O. H. J. Krag.
Fire-places, &c., promoting combustion in—2665—L. Henrion.
Fires, &c., extinguishing—2678—A. V. Newton.
Flax, &c., breaking and softening—2707—G. A. C. Bremme.
Furnaces—2607—J. Jukes and E. Wood.
Furnaces—2708—J. Sawyer.
Furnaces and ovens or kilns—2686—W. E. Newton.
Furniture, casters for—2619—C. D. Escoffier.
Grain, treating—2730—J. Polson.
Iron and steel—2617—T. S. Webb.
Iron and steel—2684—J. J. Bodmer.
Key guards, &c.—2700—A. M. Clark.
Knitting machines—2639—H. B. Barlow.
Lithographic printing, &c., producing transfers and blocks for—2718—T. J. Denne and H. Billingsley.
Locomotives, centre rail—2641—C. P. Stewart and J. Kershaw.
Looms—2689—J. Holding and J. Eccles.
Looms—2715—J. Belicard.
Looms—2726—J. L. Norton.
Mariner's compass and dipping needle, correcting the deviations of the—2705—J. H. Johnson.
Mariners' compasses—2690—H. Allman.
Matches, fuses, &c.—2675—J. B. Palmer.
Meat, &c., apparatus for preserving—2667—B. Kershaw.
Metallic hoops, fastening for—2663—J. H. Johnson.
Metals, galvanising—2725—W. R. Lake.
Millstones, airing and ventilating—2526—C. Cérissier.
Musical keys, &c., apparatus for comparing—2647—A., G. E., and F. Earnshaw.
Nozzles for blowing air, steam, &c.—2605—J. Webster.

Ordnance—2687—C. C. Steenstrup.
Ordnance, apparatus for absorbing, storing, and utilising the force of recoil of—2539—A. Moncrieff.
Pianofortes—2633—T. King.
Pipes from lead, &c., apparatus used in manufacturing—2704—J. Hampson.
Piston rods, &c., metallic packing for—2645—W. E. Newton.
Potters' glaze and seggar wash—2702—W. Bettison.
Press beds—2732—W. E. Gedge.
Printing presses—2710—C. M. Waddie.
Pyrites, extracting the metals contained in burnt cupreous—2613—W. Wright.
Railway crossings—2637—R. H. Hill.
Railway rails, joints for uniting the ends of—2625—S. F. and A. B. Ibbotson.
Railway trains, apparatus for ensuring safety to—2649—W. Baines.
Retorts, apparatus for scouring—2739—H. and F. C. Cockey.
Rings, plates, &c., grinding and surfacing—2657—J. A. Jaques, J. T. Oakley, and J. A. Fanshawe.
Ruches, &c.—2696—C. G. Hill.
Safes, &c., mechanism for locking the doors of—2759—H. R. Minns.
Safety lamps—2688—A. H. Gilmore.
Sewing machine and other needles—2757—W. R. Lake.
Ships, constructing and sheathing—2673—J. Betteley.
Ships, &c.—2631—A. M. Clark.
Signals and musical sounds, apparatus for producing sonorous—2663—J. H. Johnson.
Slide valves—2751—E. Hill.
Smoke, consuming—2703—W. Tipping.
Smoke, consuming—2714—R. S. Burditt.
Steam boilers, apparatus for preventing the incrustation and the accumulation of sediment in—2701—H. B. Barlow, jun.
Steam boilers, preventing the radiation of heat from—2635—A. V. Newton.
Steam engines, &c.—2698—A. V. Newton.
Stoves and furnaces—2694—G. Shaw.
Submarine telegraph cables, stowing, &c.—2712—A. Collingridge.
Tape trimmings, machinery for the manufacture of—2737—W. E. Newton.
Telegraph posts—2671—W. A. Lyttle.
Tram rails, &c.—2755—C. L. Light.
Tunnels, &c., armatures for building—2573—F. Durand & C. Beslay.
Vegetable fibrous materials, utilising the waste arising in spinning—2722—H. A. Bonneville.
Vehicle for locomotion by land and water—2682—W. E. Gedge.
Velocipedes—2676—F. S. Cocker.
Waterproof coats, &c.—2334—G. Broadhurst.
Weighing scales—2723—H. J. Rogers.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Anchors—2784—J. W. Morgan.
Beam-balance for weighing grain, &c.—2806—E. O'Brien.
Bisulphites, &c., apparatus for manufacturing—2768—W. J. Turner and H. Yewdall.
Greek fire-arm—2789—H. A. Bonneville.

From Commissioners of Patents' Journal, October 5.

PATENTS SEALED.

1020. G. A. Ermen.	1108. E. T. Hughes.
1023. J. U. Askham.	1111. J. Wadsworth.
1024. J. Fletcher.	1112. D. Johnson.
1025. F. Tommasi.	1113. J. H. Dales and J. F. May-
1026. W. G. White.	grove.
1031. J. Greenslade.	1128. W. Brock.
1039. R. B. Hooper and T. and	1130. C. Turner.
H. R. Nickson.	1158. C. E. Brooman.
1042. W. Goodreds.	1160. H. J. Worssam.
1048. W. E. Gedge.	1165. A. W. C. Williams.
1051. J. Menzies, sen., and J.	1198. J. E. Ward.
Menzies, jun.	1208. R. C. Rapier.
1060. L. Mond.	1209. W. E. Gedge.
1068. A. Stewart and J. Wother-	1230. C. E. Brooman.
spoon.	1252. S. Smith.
1070. J. Pattinson.	1263. A. Muir.
1073. A. Fryer.	1305. J. A. Haberkorn and B.
1076. J. Aspinall.	Rudolph.
1080. J. Denis.	1362. W. Sead.
1085. C. Lungley.	1380. W. MacKean.
1091. P. Jensen.	1388. T. Welton.
1094. E. Brasier & J. E. Hodgkin.	1612. M. Benson.
1099. J. M. Hetherington.	1628. F. H. Lloyd.
1100. J. B. Spence.	1906. T. and R. Nuttall.
1101. P. Headridge.	2304. J. M. Clements.
1103. E. C. C. Stanford.	2416. W. R. Lake.
1107. J. Parry and R. Morris.	

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

2623. A. H. Brandon.	2533. J. Oetzmann.
2652. A. Albini and F. A.	2530. T. Berney.
Brændlin.	2534. D. Barker.
2516. D. Imhof.	2562. J. Ferrabee.
2518. J. Gueunier-Lauriac.	2539. J. R. Swann.
2526. A. M. Dix.	2563. F. W. Kaselowsky.
2540. W. Hope and H. Browning.	2564. F. W. Kaselowsky.
2541. T. Forster.	

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

2736. H. A. Marinoni.	2784. J. B. G. M. F. Piret.
2509. T. Molineux.	